1904MNRAS..64..837.

New Variable Stars found on the Astrographic Plates at the Royal Observatory, Greenwich.

(*Communicated by the Astronomer Royal.*)

In the course of the work for the *Astrographic Catalogue* under Mr. Hollis's direction a star whose approximate position for 1900 is R.A. $8^h\ 14^m\ 5^s$, Dec. $+73°\ 25'{\cdot}6$, has been found to be variable to the extent of about three magnitudes. The following table gives the measured diameter (unit $= 0''{\cdot}15$) and that of neighbouring comparison stars whose magnitudes have been inferred from the formulæ

$$m = 16{\cdot}1 - 0{\cdot}84\sqrt{d} \text{ for exposure 40 minutes}$$
$$m = 13{\cdot}7 - 0{\cdot}77\sqrt{d} \qquad \text{,,} \qquad 6 \qquad \text{,,}$$

given in vol. i. of the Greenwich Section of the *Astrographic Catalogue*, p. xxx. The magnitude of the variable on the different plates is readily obtained by comparison with these standards.

No. of Plate.	Date.	Exp.	Measured Diameters.							Deduced Mag. of Variable.
			Var.	α.	β.	γ.	δ.	ε.	ζ.	
				m 13·0	m 12·1	m 11·5	m 10·8	m 10·0	m 9·6	
		min.								m
3782	1897 Dec. 20	40	20	—*	20	30	42	54	62	12·1
4288	1898 Feb. 21	40	16	12	22	26	42	66	64	12·6
4320	1899 27	40	38	6	16	24	34	38	50	10·0
4361	1899 Mar. 11	40	16	14	22	32	42	56	64	12·8
4761	1900 Jan. 2	6	5	6	12	19	26	38	44	13·1
4793	1900 24	6	22	3	8	11	20	26	34	10·5
6004	1902 Mar. 25	40	22	10	16	20	30	40	42	11·4
6010	1902 27	40	28	12	18	24	36	46	58	11·3

The positions of the variable and reference stars are as follows:

	Zone and No. in *Astrogr. Catalogue.*	Zone and No. in B.D.	Approximate Position, 1900. R.A.	Dec.
			h m s	° ′
Variable	73, 3544		8 14 5	73 26
α	73, 3547		8 17 12	73 28
β	73, 3514		8 16 34	73 15
γ	73, 3525		8 16 18	73 15
δ	73, 3545		8 16 21	73 29
ε	73, 3509	° 73, 417	8 21 8	73 7
ζ	73, 3523	73, 411	8 13 56	73 19

A star, whose approximate position for 1900·0 is R.A. $19^h\ 40^m\ 38^s$, Dec. $+80°\ 42'$, is suspected of being variable, and further photographs are being taken for comparison.

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* Not shown, owing to fog on plate.

1904MNRAS..64..837.

New Empirical Term in the Moon's Longitude.
By P. H. Cowell.

Tisserand, *Mécanique Céleste*, vol. iii. p. 417, after tabulating the Moon's errors from 1620 to 1888 and discussing Newcomb's empirical term of 273 years, says:

"La représentation est satisfaisante en général; toutefois, il subsiste des indices d'une autre inégalité, à période moindre, et ayant un coefficient de $2''$ à $3''$."

I believe that I have succeeded in fixing the period of this term at 69 ± 3 years. Its coefficient is about $2''$, and it reaches a maximum value about 1825.

At the earliest opportunity I hope to publish a full analysis.

M. Radau has kindly referred to his calculations of planetary inequalities, and he has informed me that the two terms with arguments $g - 14E + 9r$ and $\varpi + 8E - 5V$, which are approximately of the right period, have insensible coefficients.

A Remarkable Nebula in Cygnus connected with Starless Regions.
By Dr. Max Wolf.

In earlier papers I have pointed out that there seems to exist a curious relation in the distribution of extended nebulæ and fainter stars. I had found that all extended nebulæ discussed at our Observatory are situated in the interior of regions containing only a very small number of faint stars. It afterwards appeared that Sir William Herschel had some idea of this remarkable fact. We have been able to show that the two great *Orion* nebulæ, as well as the North America nebulæ in *Cygnus*, are surrounded by and are situated at the edge of regions nearly void of faint stars. My assistant, Mr. Kopff, has published an exact enumeration of the stars about these objects,* from which it is proved that nearly all faint stars have disappeared from the immediate surroundings of these nebulæ, though they are about ten times more numerous both in the nebulæ themselves and far outside. The few stars remaining in the lacunæ belong to the brighter magnitudes.

Similar relations seem to exist for all extended nebulæ. In addition to the above named the same is the case with regard to the following objects:

The great nebula Messier 8, *Sagittarii.*
" " " 20, "
" " γ *Scuti.*
" " ρ *Ophiuchi.*
" " δ "

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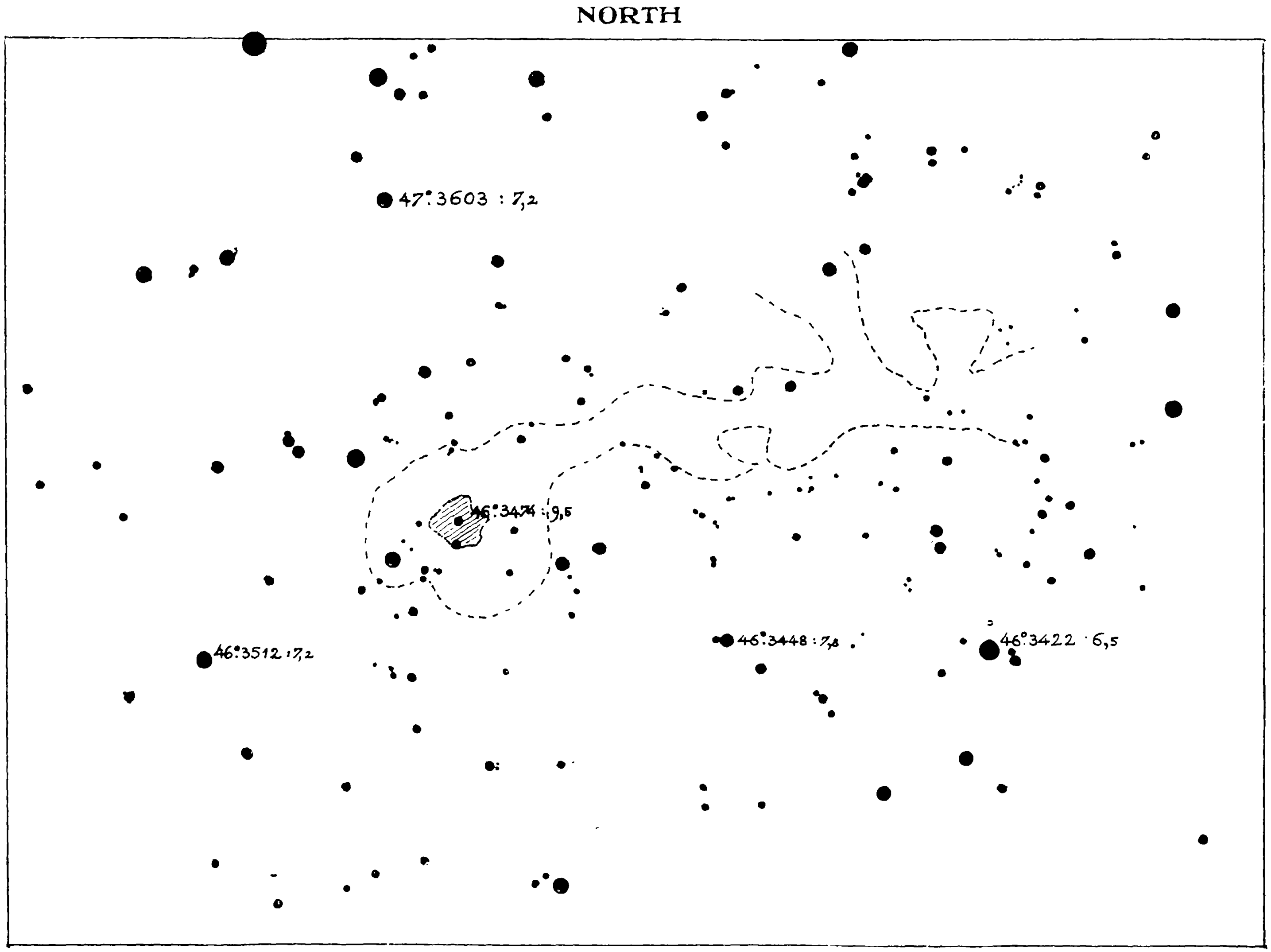
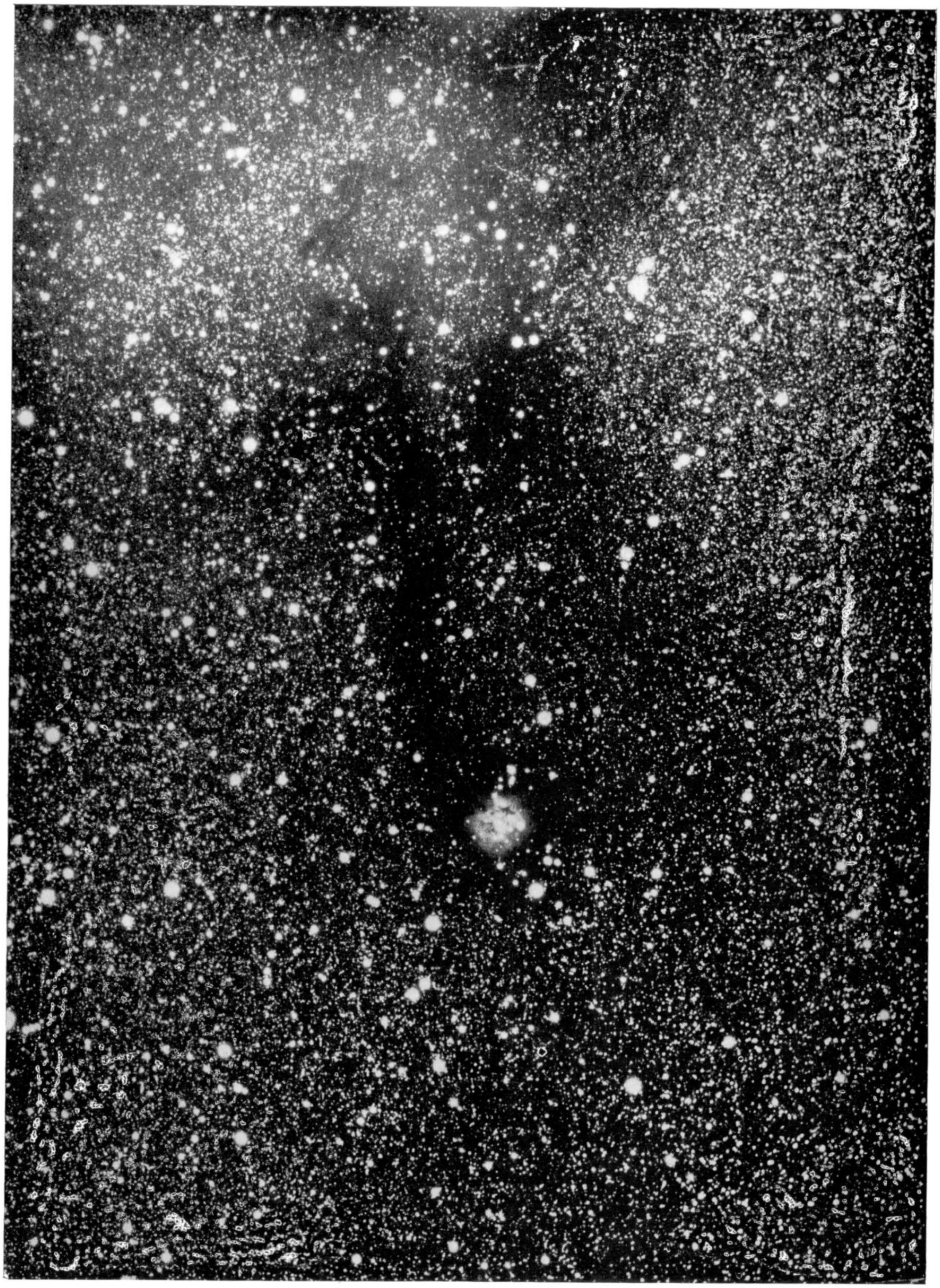
* *Publ. d. Astrophys. Obs. Königstuhl*, i. 177.

1904MNRAS..64..837.



KEY MAP

1904MNRAS..64..837.



DETACHED NEBULA IN CYGNUS.

PHOTOGRAPH BY DR. MAX WOLF, HEIDELBERG.